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WESTMAN CHAMPLIN (MICROSOFT CORPORATION)
SUITE 1400
900 SECOND AVENUE SOUTH
MINNEAPOLIS, MN 55402-3319

| EXAMINER | |
|---|---|
| COLUCCI, MICHAEL C | |

| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/679,556 | RAMSEY, WILLIAM D. | |
| | Examiner | Art Unit | |
| | Michael C. Colucci | 2626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1-33_ is/are pending in the application.
  4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1-33_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on _06 October 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.
  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  a)☐ All b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
  * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _10/04/06, 1/18/05_.
4) ☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Please note: The art unit listed on applications sent on or after 8/20/2007 has changed from 2609 to 2626. Examiner assigned to case still remains.

## ***Response to Arguments***

Applicant's arguments filed have been fully considered but they are not persuasive. The limitations that are not believed to be within the teachings of Su and Boman are in fact taught in both teachings.

With respect to claims 1, 4, and 19:

Re claim 1, (Remarks page 1, paragraph 3):

Su teaches a scoring mechanism where an estimation of a transition probability is required for scoring, where the frequencies of occurrence of phrase levels match are reduced from a known phrase level (Su col 15 line 53-66). Su teaches the decomposition of an annotated syntax tree into annotated phrase levels and the application of semantic score probabilities for each pair of annotated phrase levels (Su claim 12).

Re claim 4, (Remarks page 2, paragraph 1 line 8 – paragraph 2 line 15):

Su teaches a semantic score being determined by recognizing at least one word within a sentence having a particular semantic attribute sequence (Su claim 12).

Re claim 19, (Remarks page 3, paragraph 2):

Boman teaches a word selector and semantic analyzer that resolve ambiguities where the user supplies additional information to specify either program content or meta-command data (Boman col 3 line 1-20). The semantic analyzer analyzes the user input to find if the information is program content or meta-commands. Su teaches the selection of a preferred structure among structures that compare scores, where parsed structures before a final output are selected (Su fig. 6 & col 20 line 10-20). Both teachings disclose parsing. Being that Su teaches various structures used during the parsing and analysis and Boman teaches the distinguishing of command from program content during parsing and analysis. The combined teaching of Su and Boman as a whole render placing a full semantic structure within multiple command structures after deciphering between command and

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Su Keh-Yih et al, US 5,418,717 (herein after Su).

Re claim 1, Su discloses a "method of identifying a semantic structure from a text (Su Col 9 line 66 – Col 10 line 6), the method comprising" "identifying semantic entities from the text (Su Col 9 line 66 – Col 10 line 6)"

"combining semantic entities to form at least two (Su col 2 line 49-66) candidate semantic structures (Su *Col 17 line 4-21)*"

"generating a semantic score for each candidate semantic structure based on the likelihood of the semantic structures (Su col 11 line 42-50)"

"generating a transition score (Su col 21 line 40-49) for each candidate semantic structure by generating a separate transition probability (Su col 15 line 53-66), for each pair of semantic entities (Su col 3 line 29-39) that appear on a same level (Su col 21 line 47-52) in a candidate semantic structure (Su col 11 line 42-50) wherein generating a transition probability (Su col 13 line 18-33) comprises using the types of the semantic entities in a pair of semantic entities to retrieve a value (Su col 22 line 47-52) used to generate the transition probability"

*(A transition probability is taught to be a requirement for a syntactic score. Therefore, a transition score is construed to be a syntactic score dependent on transition probability. A value is construed to be a score generated from a probability. A transition score is also construed to be a Markov score.)*

"generating a syntactic score for each candidate semantic structure based in part on the position of a word in the text and the position in the semantic structure of a semantic entity formed from the word (Su col 22 line 66 – col 23 line 57)" "combining the syntactic score and the semantic score for each semantic structure to select one of the candidate semantic structures (Su Col 9 line 66 – Col 10 line 6) for at least a portion of the text"

Re claim 2, Su discloses a "method of claim 1 wherein generating a syntactic score comprises for each parent-child relationship (Su col 21 line 4-10) between semantic entities in a candidate semantic structure, identifying a token (Su col 5 line 58-68) position of a word associated with a parent semantic entity and identifying a token position (Su col 22 line 66 – col 23 line 57) of a word associated with a child semantic entity(Su col 21 line 4-10) and determining probability based (Su col 21 line 4-49) on the token positions"

Claim 3 cancelled.

Claim 4 cancelled.

Re claim 5, Su discloses a "method of claim 1 wherein using semantic entities to form a candidate semantic structure comprises including semantic entities in the candidate semantic structure that are not identified (Su col 3 line 63 - col 4 line 3, col 18 line 50-61) from the text"

Re claim 6, Su discloses a "method of claim 5 wherein generating a semantic score comprises using a penalty factor to discount a probability (Su col 2 line 49-66) of a semantic entity if the semantic entity (Su col 18 line 50-61) was not identified from the text (Su col 3 line 63 - col 4 line 3, col 18 line 50-61)"

*(A penalty factor is construed as a lower probability due to generating candidate entries at nodes that are not from the text but from another source such as a dictionary)*

Re claim 7, Su discloses a "method of claim 1 wherein identifying semantic entities comprises using a schema (Su Col 18 line 50-61) in which text is associated with semantic entities"

Re claim 8, Su discloses a "method of claim 7 wherein a single word is associated with multiple semantic entities (Su Col 3 line 1-10) in the schema"

Re claims 9 and 10, Su discloses a "method of claim 7 wherein using semantic entities to form a semantic structure comprises basing the semantic structure on relationships (Su Fig. 103, Col 6 line 1-14) between semantic entities that are defined in a schema (Su Col 3 line 1-10)"

*(Lexicon by definition is a dictionary and in some circumstances is more advanced than a dictionary. A relationship is implied between input text and the comparing structures)*

Re claim 11, Su discloses a "method of claim 9 wherein basing the semantic structure on relationships that are defined in a schema comprises"

"constructing a table (Su col 17 line 47-66) with an entry that is indexed by two semantic entities and that contains a set of semantic structures found in the schema(Su Col 18 line 50-61), each semantic structure (Su col 11 line 42-50) containing the two semantic entities (Su col 2 line 49-66) used to index the entry"

"searching the table using the two semantic entities to locate the set of semantic structures(Su col 17 line 47-66)" "forming a semantic structure (Su Col 9 line 66 – Col 10 line 6) for each semantic structure in the set of semantic structures"

*(By referencing or indexing the different elements within a table, it implies that a pair or pairs of pivot words or semantic entities can be located for processing)*

Re claims 12-13, Su discloses a "method of claim 1 further comprising combining a selected semantic structure with a further semantic entity identified from the text to form an expanded semantic structure (Su Col 9 line 32-43 and Col 2 line 12-21)"

Re claim 14, Su discloses a "method of claim 12 wherein combining a selected semantic structure with a further semantic entity comprises performing an ordered search comprising"

"determining if the further semantic entity can be placed beneath (Su Col 21 line 11-15) any of the entities in the selected semantic structure (Su fig. 4)"

"determining if a head (Su col 21 line 1-10) of the selected semantic structure can be placed beneath (Su fig. 4) the further semantic entity"

"determining if there is a common ancestor entity that both the further semantic entity and the head of the selected semantic structure can be placed beneath (Su col 21 line 1-10)"

*(The head of a structure is construed as the parent node of a tree structures and other nodes beneath it are child nodes and can also parents of other subsidiary nodes)*

Re claim 18, Su discloses a "method of claim 1 further comprising pruning (Su col 19 line 9-19) a candidate semantic structure from further consideration based on the syntactic score (Su col 9 line 66 – col 10 line 18) and the semantic score (Su Col 9 line 32-43 and Col 2 line 12-21) for the semantic structure."

## *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 15-17 and 19-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su Keh-Yih et al, US 5,418,717 (herein after Su) in view of Boman et al 6,480,819 (herein after Boman).

Re claim 15, Su discloses a "method of claim 1 further comprising: determining that a selected semantic structure (Su Col 9 line 66 – Col 10 line 6) is not a command (Boman col 5 line 9-30) semantic structure"

"placing the selected semantic structure in a command (Boman col 5 line 9-30) semantic structure"

"identifying (Boman col 3 line 1-20) the command (Boman col 5 line 9-30) semantic structure as the semantic structure (Su Col 9 line 66 – Col 10 line 6) of the text"

Su fails to teach of deciphering between command and selected structure. Boman discloses a semantic analyzer that can distinguish whether the user's input is intended for description of program content or for meta-commands. Program content is construed to refer to user-entered information such as speech that is converted to text. Therefore, the combined teaching of Su and Boman as a whole would have rendered obvious utilization of a feature for distinguishing between command structures and selected input structures as claimed.

Re claim 16, the combined teaching of Su and Boman disclose a "method of claim t5 further comprising placing the selected semantic structure in multiple (Su col 16 line 31-49) command (Boman col 5 line 9-30) semantic structures (Su Col 9 line 66 – Col 10 line 6)"

Re claim 17, the combined teaching of Su and Boman disclose a "method of claim 16 further comprising scoring each command (Boman col 5 line 9-30) semantic structure (Su Col 9 line 66 – Col 10 line 6) and selecting a highest scoring command semantic structure as the semantic structure of the text (Su col 26 line 50-67)"

Re claim 19, the combined teaching of Su and Boman disclose a "computer-readable medium having computer-executable instructions (Su fig. 2) for performing steps comprising:"

" identifying semantic entities from a text (Su Col 9 line 66 – Col 10 line 6)"

"forming a set of partial semantic structures (Su col 23 line 40-46) from the semantic entities"

"scoring (Su col 21 line 40-49) each of the partial semantic structures (Su col 23 line 40-46) to provide a score for each partial semantic structure" "pruning (Su col 19 line 9-19) at least one partial semantic structure (Su col 23 line 40-46) and retaining (Su col 21 line 4-10) at least one partial semantic structure based on the scores (Su col 21 line 40-49) for the partial semantic structures"

"forming a full semantic structure (Su col 19 line 38-47 & Col 9 line 66 – Col 10 line 6) from a retained partial semantic structure (Su col 23 line 40-46), the full semantic structure including all semantic entities identified from the text"

(A full structure is construed to Include all entities from a text)

"determining that the full semantic structure is not a command (Boman col 3 line 1-20) semantic structure and the full semantic structure (Su col 19 line 38-47 & Col 9 line 66 – Col 10 line 6) in multiple command semantic structures (Su col 16 line 31-49), scoring (Su col 21 line 40-49) each command semantic structure, and selecting one of the command semantic structures based on the scores (Su col 26 line 50-67)"

Su fails to teach of deciphering between command and selected structure. Boman discloses a semantic analyzer that can distinguish whether the user's input is intended for description of program content or for meta-commands. Program content is construed to refer to user-entered information such as speech that is converted to text. Therefore the combined teaching of Su and Boman as a whole would have rendered obvious differentiating a command structure, where multiple command structures exist and selecting a command structure based on a score.

Re claim 20, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 19 wherein identifying semantic entities comprises utilizing a schema (Su Col 18 line 50-61) in which semantic entities are associated with text (Su Col 9 line 66 – Col 10 line 6)"

Re claim 21, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 19 wherein forming a set of partial semantic structures (Su col 23 line 40-46) comprises"

"accessing a table (Su col 18 line 34-49) to find an entry indexed (Su col 17 line 47-66) by two semantic entities (Su col 2 line 49-66) identified from the text, the entry providing a plurality of semantic structures (Su col 16 line 31-49) that include both of the two semantic entities (Su col 3 line 29-39)"

*(By referencing or indexing the different elements within a table, it implies that a pair or pairs of pivot words or semantic entities can be located for processing)*

"forming a partial semantic structure (Su col 23 line 40-46) for each of the semantic structures (Su col 23 line 40-46) provided by the entry"

Re claim 22, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 21 further comprising building the table (Su col 18 line 34-49) from a schema (Su Col 18 line 50-61) that describes relationships (Su col 21 line 4-10) between semantic entities"

Re claim 23, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 2l wherein at least one partial semantic structure (Su col 23 line 40-46) comprises a semantic entity that is not identified from the text (Su col 3 line 63 - col 4 line 3, col 18 line 50-61)"

Re claim 24, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 23 wherein scoring a partial semantic structure (Su col 23 line 40-46) comprises calculating a score (Su col 21 line 40-49) for each entity in the partial semantic structure, wherein the score for an entity is reduced (Su col 16 line 31-49) if the entity was not identified from the text (Su col 3 line 63 - col 4 line 3, col 18 line 50-61)"

Re claim 25, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 19 wherein forming a full semantic structure comprises combining a partial semantic structure (Su col 23 line 40-46) with a semantic entity identified (Su Col 9 line 66 – Col 10 line 6) from the text"

Re claim 26, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 25 wherein forming a full semantic structure comprises"

"determining if the semantic entity can be placed beneath (Su Col 21 line 11-15) any of the entities in the partial semantic structure (Su col 23 line 40-46)"

"determining if a head (Su col 21 line 1-10) of the partial semantic (Su col 23 line 40-46) structure can be placed beneath (Su Col 21 line 11-15) the semantic entity"

"determining if a head of the partial semantic structure and the semantic entity can both be placed beneath a common ancestor entity (Su col 21 line 1-10)"

Claim 27 cancelled.

Claim 28 cancelled.

Re claim 29, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 19 wherein scoring a partial semantic structure comprises determining a semantic score (Su col 21 line 40-49) based on the semantic entities in the partial semantic structure (Su col 23 line 40-46) and the relationship (Su col 21 line 4-10) between the semantic entities in the partial semantic structure"

Re claim 30, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 29 wherein scoring (Su col 21 line 40-49) a partial semantic structure (Su col 23 line 40-46) further comprises determining a syntactic score (Su col 9 line 66 – col 10 line 18) based on positions of words in the text associated with the semantic entities (Su Col 9 line 66 – Col 10 line 6)"

Re claim 31, the combined teaching of Su and Boman disclose a "computer-readable medium of claim 30 wherein scoring a partial semantic structure further comprises determining a transition score (Su col 21 line 40-49) based on the order of semantic entities, wherein the order is set by the alignment of the semantic entities to the text that is associated with the semantic entities (Su col 20 line 20-33)"

***2.*** **Claims 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Su* US 5418717 A (herein after Su) in view of Giustiniani et al US 5230037 (herein after Giustiniani).**

Re claim 32, Su teaches a "method of claim 1 wherein retrieving a value (Su col 22 line 47-52) used to generate a translation probability (Su col 15 line 53-66) comprises retrieving the number of times each ordering of the pair (*Su col 15 line 53-66)* of entities was seen in training data (Giustiniani col 5 line 15-65)"

*(Frequency of occurrence is construed to represent the number of times of occurrence)*

Su fails to disclose training data. Giustiniani teaches a Markov model speech synthesizer using training data with occurrences where training is performed on a speech corpus (Giustiniani col 5 line 3-55). Giustiniani also teaches estimates of state transition probabilities (Giustiniani col 5 line 3-55). Therefore, the combined teaching of Su and Giustiniani as a whole would have rendered obvious retrieving the number of times a pair of entities was seen in the training data.

Re claim 33, Su teaches a "method of claim 32 wherein generating a translation probability (Su col 15 line 53-66) comprises dividing (Giustiniani col 5 line 3-55) the number of times one ordering (Su col 15 line 53-66) of the pair of entities was seen in the training data by a sum (Giustiniani col 5 line 3-55) of the number of times each ordering of the pair of entities was seen in the training data (Giustiniani col 5 line 15-65)"

Su fails to disclose dividing the number of times one pair is seen in the training data by a sum of the number of times each pair was seen. Giustiniani teaches probability vectors computed as the number of occurrences divided by the sum of all occurrences, (Giustiniani col 5 line 3-55). Therefore, the combined teaching of Su and Giustiniani as a whole would have rendered obvious a transition probability by dividing the number of times one ordering of the pair was seen in the training data divided by the sum of the number of times each ordering was seen in the training data.

## *Conclusion*

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

## Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)-270-1847. The examiner can normally be reached on 7:30 am - 5:00 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Colucci Jr.
Patent Examiner
AU 2626
(571)-270-1847
Michael.Colucci@uspto.gov

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER